

- BÖHME, W. (1969): Beitrag zur Kenntnis der Zwergmaus, *Micromys minutus* (Pallas, 1778) (Rodentia, Muridae). Faun. Mitt. Norddeutschl. 3, 247–254.
- (1978): *Micromys minutus* (Pallas, 1778) – Zwergmaus. Handb. d. Säugetiere Europas. Vol. 1, 290–304. Wiesbaden: Akad. Verlagsges.
- HARRIS, S. (1979): History, distribution, status and habitat requirements of the harvest mouse (*Micromys minutus*) in Britain. Mammal Rev. 9, 159–171.
- KOSKELA, P.; VIRO, P. (1976): The abundance, autumn migration, population structure and body dimensions of the harvest mouse in northern Finland. Acta theriol 21, 375–387.
- PIECHOCKI, R. (1958): Die Zwergmaus. Wittenberg-Lutherstadt: A. ZIEHMSEN.
- ROWE, F. P. (1958): Some observations on harvest mice from the corn ricks of a Hampshire farm. Proc. Zool. Soc. Lond. 131, 320–323.
- SOUTHWICK, C. H. (1956): The abundance and distribution of harvest mice (*Micromys minutus*) in corn ricks near Oxford. Proc. Zool. Soc. Lond. 126, 449–452.

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## On the distribution of *Globicephala melaena* (Traill, 1804) (Cetacea, Delphinidae) in the south-west Atlantic

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The genus *Globicephala* is considered as cosmopolitan (see, for exemple, TOMILIN 1967). Nevertheless, exact data on the distribution of the two species of the genus (*Globicephala melaena* and *Globicephala macrorhynchus*) are very scarce. The main cause is that the systematics of the genus has only been established recently (VAN BREE 1971).

According to the literature, information from the south-west Atlantic coasts is rather scarce. CABRERA (1940, 1961) accepts that *Globicephala melas* (sic) occurs from Mar del Plata as far as a latitude of about 70°S (for all the localities see fig. 1). PINERO and CASTELLO (1975) comment that most of the Argentinian records are not based on determined specimens, because the preserved osteological material is very poor. After GOODALL (1978) the situation would be different for Tierra de Fuego where she has been able to collect many long-finned pilot whale skeletons.

Thanks to the kind permission of the respective curators, I had the opportunity of studying the Cetacean collections of four museums of the zone, these of Rio de Janeiro, São Paulo, Buenos Aires and La Plata. Osteological material of *Globicephala melaena* is kept in two of these museums. In the Museo Argentino de Ciencias Naturales „Bernardino Rivadavia“ there are two skulls, both of them from the coasts of Buenos Aires (localities, Buenos Aires and Miramar). In the „Museu de Zoologia“ of São Paulo there is a skull. In the table measurements of the three skulls are shown.

The São Paulo specimen is the most interesting one. It was collected in Cananéia, São Paulo state, in 1920 by LÜDERWALDT, according to the attached data. The animal had been identified as *Globicephala macrorhyncha* (sic). However, if one takes into account the characters that VAN BREE (1971) gives for determining the two species of the genus, this skull belongs to a long-finned pilot whale. First of all there were 10 alveoli on each side of the lower jaw. They were not visible in the upper jaw. Normally, the presence of more than nine teeth in each tooth row is a typical character of *Globicephala melaena*, always

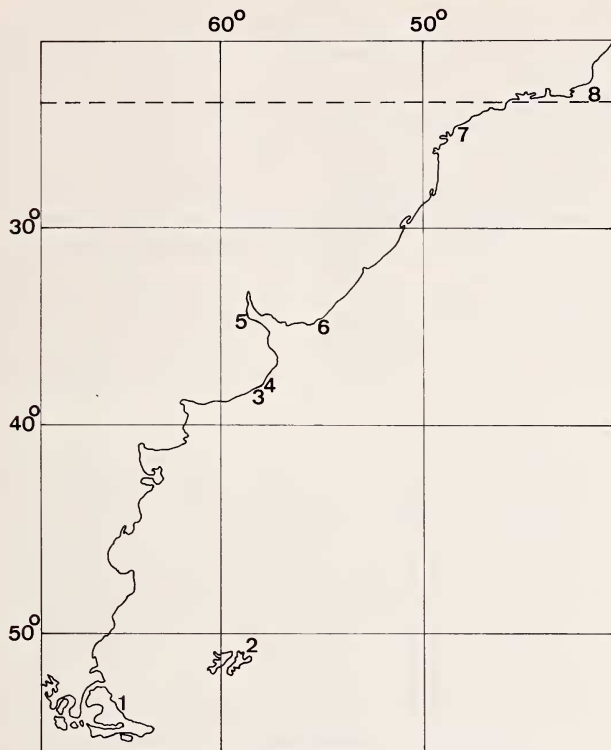


Fig. 1. South American localities mentioned in the text. 1 = Tierra de Fuego; 2 = Malvinas islands; 3 = Miramar; 4 = Mar del Plata; 5 = Buenos Aires; 6 = Santa María cape; 7 = Cananéia; 8 = Tropic of Capricorn



Fig. 2. Dorsal view of the skull of the Cananéia specimen

according to VAN BREE. Nevertheless, this character alone does not seem sufficient for determination. I have seen a specimen of short-finned pilot whale with ten teeth (CASINOS and BOU 1980). The other specific character however was very clear: the rostrum was rather long, with the lateral borders of the maxillae not covered by the premaxillae (fig. 2).

After PIÑERO and CASTELLO (1975) the most northerly record of long-finned pilot whale in the south-west Atlantic would be Santa María cape (Rocha district, Uruguay). So, as very often happens with cetacean distribution, we wonder if the Cananéia specimen is an isolated one or it exemplifies the normal distribution of the species in this zone. The record would move the known limit about 9° to the north, very close to the theoretical limit if we accept the antitropical distribution of *Globicephala melaena* in the Atlantic postulated by DAVIES (1963). There is only a little more than a degree between Cananéia and the Tropic of Capricorn.

Let us examine the distribution of the long-

finned pilot whale off the African coasts. A recent paper (VAN BREE et al. 1978) has shown the presence of both species of pilot whale in South Africa, although it seems that *Globicephala melaena* is predominant. The real northern limit of this species in the zone does not appear clear. For the north-west African coast, we have DUGUY's data (1976). He observed long-finned pilot whales at 21° 24' N/17° 42' W, that means about 2° below the Tropic of Cancer. Perhaps we can establish a comparison with the situation in the south-west Atlantic. In both zones cold currents exist that reach as far as subtropical/tropical waters. In Africa there is the Canaries current; in South America the Malvinas current. MITCHELL (1975) has already shown the presence of *Globicephala melaena* in the cold

Table  
Measurements of the three skulls

Measurements	M.A.C.N.B.R. Buenos Aires	Miramar 25-136	M.Z.S.P. Cananéia 4192	%   		
1 Total skull length*	557 mm	683 mm	653 mm	100	100	100
2 Rostrum length	311 mm	385 mm	318 mm	55.8	56.3	48.7
3 Rostrum basal width	240 mm	280 mm	284 mm	43.0	40.9	43.5
4 Rostrum width 60 mm anterior to base	225 mm	261 mm	265 mm	40.3	38.2	40.6
5 Rostrum width at middle	179 mm	239 mm	214 mm	32.1	34.0	32.7
6 Rostrum width at 3/4 of the length	137 mm	159 mm	175 mm	24.5	23.2	26.8
7 Maximum premaxillae width	157 mm	184 mm	188 mm	28.1	26.9	28.8
8 Preorbital width	400 mm	463 mm	450 mm	71.8	67.8	69.0
9 Postorbital width	429 mm	512 mm	495 mm	77.0	75.0	75.8
10 Zygomatic width	413 mm	—	498 mm	74.1	—	76.2
11 Width of braincase across squamosals	281 mm	318 mm	315 mm	50.4	46.5	48.2
12 Length temporal fossa	108 mm	144 mm	150 mm	19.3	21.0	23.0
13 Height temporal fossa	93 mm	100 mm	127 mm	16.7	14.6	19.4
14 Tip rostrum to the nares	408 mm	478 mm	460 mm	73.2	70.0	70.4
15 Tip rostrum to the pterygoid bone	336 mm	417 mm	382 mm	60.3	61.0	58.5
16 Length of upper tooththrow (right)	—	183 mm	—	—	26.8	—
17 Length of upper tooththrow (left)	—	171 mm	—	—	25.0	—
18 Number of alveoli of the upper jaw (right)	—	11	—	—	—	—
19 Number of alveoli of the upper jaw (left)	—	9	—	—	—	—
20 Lower jaw length (left side)	476 mm	558 mm	524 mm	85.4	81.6	80.2
21 Coronoid height	126 mm	159 mm	162 mm	22.6	23.2	24.8
22 Length of the lower jaw symphysis	58 mm	66 mm	69 mm	10.4	9.6	10.5
23 Length of the lower tooththrow (right)	158 mm	160 mm	154 mm	28.3	23.4	23.5
24 Length of the lower tooththrow (left)	150 mm	160 mm	158 mm	26.9	23.4	24.2
25 Number of alveoli of the lower jaw (right)	11	10	10	—	—	—
26 Number of alveoli of the lower jaw (left)	10	10	10	—	—	—

\* From the tip of the rostrum to the basioccipital  
Abbrev.: M.A.C.N.B.R., Museo Argentino de Ciencias Naturales „Bernardino Rivadavia“;  
M.Z.S.P., Museu de Zoologia de São Paulo.

currents of the Southern Hemisphere. Therefore, it could be useful to say some words on the Malvinas current in order to analyse the possible distribution of the long-finned pilot whale in the area.

BOLTOVSKOY (1959) gives a synthetic survey of the Malvinas current. It seems that this current is formed by a mass of cold water off the coasts, limited easterly by the Brazil current. The most interesting characteristic for our problem is the northern limit. BOLTOVSKOY used foraminifera as biological indicators. He found foraminifera typical of the Malvinas current as far north as 22° 11' S. Nevertheless, it seems that the cold water reaches up to this latitude flowing only on the bottom, since in some place more to the south, off the Brazilian coasts, the waters of the Malvinas current sink and do not rise to the surface. Of course, this current, like any other oceanic one, is not constant in its characteristics and limits. We can assume that changes at the northern limit can influence the distribution of species, like *Globicephala melaena*, which cannot normally be expected to reach such low latitudes.

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#### References

- BOLTOVSKOY, E. (1959): La corriente de Malvinas (un estudio en base a la investigación de Foraminíferos). Serv. Hidrogr. Naval, H. 1015, 1–96.
- BREE, P. J. H. VAN (1971): On *Globicephala sieboldii* GRAY, 1846, and other species of Pilot Whales (Notes on Cetacea, Delphinioidea III). Beaufortia 19, 79–87.
- BREE, P. J. H. VAN; BEST, P. B.; ROS, G. J. B. (1973): Occurrence of two species of Pilot Whales (genus *Globicephala*) on the coast of South Africa. Mammalia 42, 323–328.
- CABRERA, A. (1961): Mamíferos de América del Sur. II. Rev. Mus. Arg. Cienc. Nat. Bs. As. 4, 309–732.
- CABRERA, A.; YEPES, J. (1940): Mamíferos sud-americanos (vida, costumbres y descripción). Buenos Aires: Compañía Argentina de Editores.
- CASINOS, A.; BOU, J. (1980): On a massive stranding of short-finned pilot whale, *Globicephala macrorhynchus* Gray, 1846, on Margarita Island (Venezuela). Sci. Rep. Whales Res. Inst. 32, 191–194.
- DAVIES, J. L. (1963): The antitropical factor in cetacean speciation. Evolution 17, 107–116.
- DUGUY, R. (1976): Contribution à l'étude des Mammifères marins de la côte nordouest d'Afrique. Rev. Trav. Inst. Pêches marit. 39, 321–332.
- GODALL, R. N. P. (1978): Report on the small cetaceans stranded on the coasts of Tierra de Fuego. Sci. Rep. Whales Res. Inst. 30, 197–230.
- MITCHELL, E. (Ed.) (1975): Report on the Meeting of Smaller Cetaceans. J. Fis. Res. Board. Can. 32, 889–983.
- PIÑERO, M. E.; CASTELLO, H. P. (1975): Sobre „ballenas piloto“ *Globicephala melaena edwardii* (Cetacea, Delphinidae) varadas en la isla Trinidad (Provincia de Buenos Aires). Rev. Mus. Arg. Cienc. Nat. Bs. As. 12, 13–24.
- TOMLIN, A. G. (1967): Mammals of the U.S.S.R. and adjacent countries. IX. Cetacea. Jerusalem: Israel Progr. f. Scient. Traslat.

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